

# Frost And Forages

URBANA, ILL.

**W**ith fall frosts, precautions and management strategies may need to be taken with the harvesting and feeding of the sorghum family of annual grasses.

Sudangrass and sorghum-sudangrass hybrids contain a compound called dhurrin. When the plant tissue is frozen, enzymes in the plant convert dhurrin into hydrocyanic acid or hydrogen cyanide, also referred to as prussic acid. Sudangrass and sorghum-sudangrass hybrids require 28 degrees F for a killing frost, but even a light frost requires special management. When a large amount of the substance is consumed in a short period of time by ruminants, the dose can be lethal. The prussic acid potential is higher in the early stages of growth, but decreases until fall.

The above-mentioned grasses in the sorghum family can be safely harvested or grazed after a frost if: (1) the crop was safe to harvest before the frost and (2) the plant tissue is allowed to dry.

Safe harvest or grazing is based upon the general height of the plant. University of Illinois suggests that sudangrass and sudangrass hybrids be at least 18 inches tall and sorghum-sudangrass hybrids be at least 24 inches tall before harvesting.

At the proper height, frozen sudangrass and sorghum can be fed once the plant tissue has dried. Drying allows the prussic acid to dissipate from the plant material.

With a light frost, only the tops of the plants may be damaged and one should delay harvest-

ing or grazing 4 to 5 days. With a killing freeze (28 degrees or colder), one should wait at least 8 to 10 days before harvesting to allow for adequate drying.

Freeze causes the sorghum family to grow as annuals and thus produce new tillers or suckers from the base of the plants. These tillers are very high in prussic acid.

The safest way to utilize frozen material of questionable prussic acid content is to ensile it. The prussic acid content is reduced substantially by the fermentation process (typically requiring at least 4 weeks). A second method is to green chop only what livestock will eat in 4 to 5 hours and the third is to make the crop into hay if dry-down conditions allow. The least desirable method of using questionable sudangrass and sorghums is to graze them.

Horses should never graze sorghums or sudangrass anytime as these forages may result in paralysis and urinary disorders.

Pearl millet, cool-season grasses, alfalfa, and clovers do not produce prussic acid.

Alfalfa does not become toxic after a frost. One should wait a day or two until the frozen parts of alfalfa dry before grazing to reduce the increased bloat potential and the laxative effect. Once the frosted plant parts dry, the bloat potential returns to normal. A killing freeze for alfalfa is generally considered to be 26 degrees F for a few days. In northern Illinois an established alfalfa stand can be harvested after a killing freeze or after mid-October, but leave 6- to 8-inch stubble so the stems can catch snow and remain above any ice layer. Δ